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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,236	06/27/2003	Gopal B. Avinash	135795	8574

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EXAMINER	
TABATABAI, ABOLFAZL	

ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 10/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/608,236	AVINASH, GOPAL B.	
	Examiner	Art Unit	
	Abolfazl Tabatabai	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6-9,13-15,17-20,24,25,26 and 28-30* is/are rejected.

7)☒ Claim(s) *4,5,10-12,16,21-23,27,31 and 32* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/17/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Harvey (U. S. 6,275,038 B1).

Regarding claim 1, Harvey discloses a method for generating an estimate of inhomogeneity, said method comprising:

generating a first estimate of inhomogeneity (column 4, lines 46-63 and column 13, lines 44-52);

generating a second estimate of inhomogeneity (column 4, lines 46-63 and column 13, lines 44-52); and,

generating a final estimate of inhomogeneity using at least the first and second estimates (column 4, lines 46-63).

Claim 25 is similarly analyzed as claim 1 above.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2, 3, 6-9, 26 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harvey (U. S. 6,275,038 B1) in view of Gur et al (U. S. 5,627,907).

Regarding claim 2, Harvey is silent about the specific details regarding a method in accordance with claim 1 wherein said generating a first estimate comprises generating a first estimate by filtering an image gm, said generating a second estimate comprises generating a second estimate of inhomogeneity using an operation other than filtering on an image gm.

In the same field (medical imaging) of endeavor, however, Gur discloses computerized detection of masses and micro calcifications in digital mammograms comprises filtering on an image (column 17, lines 41-49).

It would have been obvious to a person of ordinary skill in the art at this time the invention was made to use image filtering as taught by Gur in the system of Harvey because Gur provides Harvey an improved CAD system with advantageous and useful to help radiologists and physicians obtain quicker and more precise results when analyzing mammograms. Such CAD systems would aid in cancer detection and improve the efficiency of large-scale screening.

Regarding claim 3, Harvey is silent about the specific details regarding a method in accordance with claim 2, wherein said generating a second estimate comprises generating a second estimate of inhomogeneity by dividing gm by a threshold value of gm (threshold gm).

In the same field (medical imaging) of endeavor, however, Gur discloses computerized detection of masses and micro calcifications in digital mammograms comprises generating a second estimate of inhomogeneity by dividing gm by a threshold value of gm (threshold gm) (column 9, lines 22-31 and column 20, lines 42-52).

It would have been obvious to a person of ordinary skill in the art at this time the invention was made to use image dividing and threshold value of image as taught by Gur in the system of Harvey because Gur provides Harvey an improved CAD system with advantageous and useful to help radiologists and physicians obtain quicker and more precise results when analyzing mammograms. Such CAD systems would aid in cancer detection and improve the efficiency of large-scale screening.

Regarding claim 6, Harvey is silent about the specific details regarding a method in accordance with claim 2, wherein said generating a first estimate by filtering an image gm comprises generating a first estimate by filtering an image gm with a low pass filter. In the same field (medical imaging) of endeavor, however, Gur discloses computerized detection of masses and micro calcifications in digital mammograms comprises generating a first estimate by filtering an image gm with a low pass filter (column 21, lines 6-11).

Regarding claim 7, Harvey is silent about the specific details regarding a method in accordance with claim 1 wherein said generating a first estimate comprises generating a first estimate by filtering an image gm with a first filter, said generating a second estimate comprises generating a second estimate of inhomogeneity by filtering an image gm with a second filter different than the first filter.

In the same field (medical imaging) of endeavor, however, Gur discloses computerized detection of masses and micro calcifications in digital mammograms comprises generating a second estimate of inhomogeneity by filtering an image gm with a second filter different than the first filter (column 31, lines 4-5).

Regarding claim 8, Harvey is silent about the specific details regarding a method in accordance with claim 1 wherein said generating a first estimate comprises generating a first estimate by filtering an image gm with a first low pass filter, said generating a second estimate comprises generating a second estimate of inhomogeneity by filtering an image gm with a second low pass filter different than the first filter.

In the same field (medical imaging) of endeavor, however, Gur discloses computerized detection of masses and micro calcifications in digital mammograms comprises

Regarding claim 9, Harvey is silent about the specific details regarding a method in accordance with claim 1 wherein said generating a first estimate comprises generating a first estimate by filtering an image gm with a low pass filter, said generating a second estimate comprises generating a second estimate of inhomogeneity by filtering an image gm with a band pass filter.

In the same field (medical imaging) of endeavor, however, Gur discloses computerized detection of masses and micro calcifications in digital mammograms comprises generating a second estimate of inhomogeneity by filtering an image gm with a band pass filter (column 17, lines 33-36).

It would have been obvious to a person of ordinary skill in the art at this time the invention was made to use first and second low-pass filter and band pass filter as taught by Gur in the system of Harvey because Gur provides Harvey an improved CAD system with advantageous and useful to help radiologists and physicians obtain quicker and more precise results when analyzing mammograms. Such CAD systems would aid in cancer detection and improve the efficiency of large-scale screening.

Claim 26 is similarly analyzed as claim 2 above.

Claim 28 is similarly analyzed as claim 7 above.

Claim 29 is similarly analyzed as claim 8 above.

Claim 30 is similarly analyzed as claim 9 above.

5. Claim 13 isrejected under 35 U.S.C. 103(a) as being unpatentable over Harvey (U. S. 6,275,038 B1) in view of Dean et al (U. S. 6,445,182).

Regarding claim 13, Harvey discloses a magnetic resonance imaging (MRI) system comprising:

a computer operationally coupled to said receiver, said computer configured to (fig. 3 element 110).

generate a first estimate of inhomogeneity (column 4, lines 46-63 and column 13, lines 44-52);

generate a second estimate of inhomogeneity (column 4, lines 46-63 and column 13, lines 44-52); and,

generate a final estimate of inhomogeneity using at least the first and second estimates (column 4, lines 46-63).

However, Harvey is silent about the specific details regarding the steps of:

a main magnet configured to generate a substantially uniform magnetic field;

a radio frequency pulse generator configured to excite the magnetic field;

a gradient field generator configured to generate gradients extending in different directions in the magnetic field; and,

a receiver configured to receive magnetic field magnetic resonance (MR) signals representative of an object.

In the same field (medical imaging) of endeavor, however, Dean discloses geometric distortion correction in MRI comprising the steps of:

a main magnet configured to generate a substantially uniform magnetic field (column 7, lines 47-55);

a radio frequency pulse generator configured to excite the magnetic field (column 7, lines 56-60);

a gradient field generator configured to generate gradients extending in different directions in the magnetic field (column 7, lines 56-60); and,

a receiver configured to receive magnetic field magnetic resonance (MR) signals representative of an object (column 7, lines 61-66).

It would have been obvious to a person of ordinary skill in the art at this time the invention was made to use uniform magnetic field, radio frequency and a receiver as taught by Dean in the system of Harvey because Dean provides Harvey an improved

MRI system which is relates to the field of geometric distortion correction in MRI. Using computed tomography is useful in imaging bony structure yet has limited ability to differentiate between components of inhomogeneous soft tissue structures, such as a brain for example. Also computed tomography provides images of relatively high positional accuracy.

6. Claims 14, 15,17-20 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harvey (U. S. 6,275,038 B1) and Dean et al (U. S. 6,445,182) as applied to claim13 above, and further in view of Gur et al (U. S. 5,627,907).

Regarding claim 14, Harvey and dean are silent about the specific details regarding a MRI system in accordance with claim 13 wherein said computer further configured:

generate the first estimate by filtering an image gm; and generate the second estimate of inhomogeneity using an operation other than filtering.

In the same field (medical imaging) of endeavor, however, Gur discloses computerized detection of masses and micro calcifications in digital mammograms comprises filtering on an image (column 17, lines 41-49).

It would have been obvious to a person of ordinary skill in the art at this time the invention was made to use image filtering as taught by Gur in the system of Harvey because Gur provides Harvey an improved CAD system with

advantageous and useful to help radiologists and physicians obtain quicker and more precise results when analyzing mammograms. Such CAD systems would aid in cancer detection and improve the efficiency of large-scale screening.

Claim 15 is similarly analyzed as claim 3 above.

Claim 17 is similarly analyzed as claim 6 above.

Claim 18 is similarly analyzed as claim 7 above.

Claim 19 is similarly analyzed as claim 8 above.

Claim 20 is similarly analyzed as claim 9 above.

Claim 24 is similarly analyzed as claim 14 above.

Allowable Subject Matter

7. Claims 4, 5, 10-12, 16, 21-23, 27, 31 and 32are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Other prior art Cited

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Benaron et al (U S 5,752,519) disclose device and method for detection, localization, and characterization of inhomogeneities in turbid media.

Zhang et al (U S 6,263,228 B1) disclose method and apparatus for providing separate water-dominant and fat-dominant images from single scan single point Dixon MRI séquences.

Maeda et al (U S 5,113,865) disclose method and apparatus for correction of

phase distortion in MR imaging system.

Contact Information

9. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to ABOLFAZL TABATABAI whose telephone number is (571) 272-7458.

The Examiner can normally be reached on Monday through Friday from 9:30 a.m. to 7:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Jingge Wu, can be reached at (571) 272-7429. The fax phone number for organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Abolfazl Tabatabai

Patent Examiner

Technology Division 2624

October 12, 2006

A- Tabatabai

JINGGE WU
PRIMARY EXAMINER